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Distributed Graduate Seminars: An Interdisciplinary Approach to Studying Land Conservation

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Distributed Graduate Seminars: An Interdisciplinary Approach to Studying Land Conservation

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I. THE CHALLENGE

Climate change adaptation is an increasingly important issue that poses challenges for private land conservation strategies, which tend to emphasize permanence and persistence over adaptation. Interdisciplinary seminars conducted in Spring 2011 at six U.S. universities examined how conservation organizations adapt their conservation tools to dynamic landscape change, focusing on conservation easements on private land. These distributed graduate seminars investigated the vulnerability and adaptability of current land-conservation laws and institutions in the context of climate change and examined the adaptive capacity of conservation organizations. Information on land conservation is widely dispersed and localized, as are the potential impacts of climate change on diverse landscapes. In this context, the distributed graduate seminar offers a powerful approach for engaging students in empirical research, legal analysis, and synthesis.

A. The Catalyst

In February of 2009, twenty-five people gathered at the Woods Institute at Stanford University to discuss private land conservation instruments in the context of climate change.

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Professor Buzz Thompson, working with scientist Rebecca Shaw from The Nature Conservancy, invited academics, attorneys, and activists to put their minds together to tackle the problems of protecting land in a changing world. This workshop was part of the Woods Institute's Uncommon Dialogues program that brings together experts and activists dealing with various environmental challenges to develop new solutions to existing and emerging problems. Particularly concerned with climate adaptation, the Woods Institute recognized the need to address climate change on private lands. With this agenda in mind, the Institute organized a session on private land conservation where the conversation unsurprisingly focused on conservation easements—the fastest growing land protection tool in the United States.

B. Conservation Easements

Conservation easements are generally perpetual[1] restrictions on land for conservation purposes. The enforcer of the conservation easement (the conservation easement holder) must be either a nonprofit organization or a government entity. Conservation easements encumber land, public and private, throughout the country. Local and regional land trusts held 6.2 million acres of land in 2005—an increase of 148% from 2000.[2] Both the pervasive and perpetual nature of conservation easement restrictions raise issues in the context of climate change.

Because conservation easements (1) can be drafted with flexible terms, (2) are less expensive than fee simple purchase

1. Although the majority of conservation easements are perpetual, term conservation easements are also permissible in most states. *See* Jessica Owley, *Changing Property in a Changing World: A Call for the End of Perpetual Conservation Easements*, 30 STAN. ENVTL. L. J. 121, 164 (2011).

2. LAND TRUST ALLIANCE, 2005 NATIONAL LAND TRUST REPORT (2006), *available at http://www.landtrustalliance.org/land-trusts/land-trust-census/2005-national-land-trust-census/2005-report.pdf*. In addition, many acres of conservation easements are held by national land trusts; Indian tribes; and local, state, and federal governments. Unfortunately, there is not yet a comprehensive database of conservation easements in the United States, although this is under development through the National Conservation Easement Database. NATIONAL CONSERVATION EASEMENT DATABASE, http://www.conservationeasement.us (last visited Jul. 26, 2011).

and management, and (3) are available to a variety of nonprofit and government organizations, they are an attractive option for conserving land in an effort to combat climate-change concerns for both adaptation and mitigation. In terms of mitigation, conservation easements can reduce greenhouse gas emissions by protecting land for carbon sequestration and prevention of sprawl (a contributing factor to climate change). For adaptation programs, conservation easements can preserve buffers and migratory corridors, protect refugia, and provide open space needed for resilient systems. Scientists and policymakers working together can identify key areas to protect and use conservation easements to prevent development on those lands without needing to navigate the political processes associated with land-use regulation or the expense associated with fee-simple ownership. The polarized nature of climate change politics in the United States makes voluntary land conservation between a willing seller/donor and a willing buyer/donee a particularly attractive option.

However, the static perpetual nature of most conservation easements creates concerns in the context of climate change. Although not required in most states, the majority of conservation easements are perpetual.[3] These agreements often seek to preserve today's land-use practices and preferences. The basic approach of conservation easements is to restrict land uses that are incompatible with the conservation purposes. Conservation easements generally contain few options for altering restricted land uses to prevent pressure for non-conservation use and to facilitate appraisals. In some cases, flexibility for adaptive management may be necessary to achieve the purposes of the conservation easement.[4] The structure of

3. Three states require conservation easements to be perpetual: California, Hawaii, and Florida. CAL. CIV. CODE § 815.2(b) (1979); FLA. STAT. § 704.06(2) (2009); HAW. REV. STAT. § 198-2(b) (1979). North Dakota is the only state to prohibit perpetual conservation easements. N. D. CENT. CODE § 47-05-02.1(2) (restricting conservation easements to ninety-nine years). Additionally, where landowners want the donation of a conservation easement to qualify for a charitable tax deduction, the interest must be perpetual. I.R.C. § 170(h)(5)(A).

4. *But see* Adena Rissman, *Evaluating Conservation Effectiveness and Adaptation in Dynamic Landscapes*, 74 LAW & CONTEMP. PROBS. (forthcoming 2011) (describing and endorsing conservation easements that incorporate things like evolving standards and management plans).

static permitted and restricted uses is ill-suited to adaptive management in a changing landscape.

C. The Need For More Information

One outcome of the Woods Institute workshop was the creation of a database (spearheaded by California attorney Ann Taylor Schwing) to provide conservation easement drafters with specific language regarding amendment, land management, and climate adaptation that will be particularly salient where conservation easements encumber changing landscapes.[5] While the concrete step of establishing a database of conservation easement terms provided an immediate avenue to assist drafters of future conservation easements, many members of the group felt that one of the biggest challenges was the lack of information regarding the vulnerability and adaptive potential of existing conservation easements. In determining how conservation easements would respond to climate change, there was a general sense that the question was unknowable without further study. Both expected climatic changes and conservation easements differ by site. Therefore, researchers in the group proposed a method of studying conservation easements that would provide a bigger picture of the challenges of flexibility and permanence in conservation easements while enabling student involvement in the project. The academics present were immediately intrigued by the idea of conducting a distributed graduate seminar.

II. THE DISTRIBUTED GRADUATE SEMINAR

A. The Framework

We sought to assess (1) the vulnerability of private land conservation to climate change, (2) the climate change knowledge, attitudes, and preparedness of land trust and government conservation easement holders, and (3) the adaptive potential of conservation easements. We wanted to make these assessments

5. Conservation Easement Paragraph Databank, http://www.bbklaw.com/?t=40&an=3775&format=xml (last visited July 25, 2011).

while training an interdisciplinary group of graduate and professional students to conduct research, collaborate, and think critically about the challenges of land conservation in a changing climate.

Professors from six universities conducted a distributed graduate seminar in Spring 2011. Each university's course had a slightly different form and title, but the courses were unified by topic and data collection. These seminars on climate change and conservation easements varied in size from six to twenty-five students. They attracted graduate students from law, planning, geography, environmental science, forestry, entomology, landscape architecture, civil and environmental engineering, and public policy. Each seminar examined conservation strategies in its home state. Five of the seminars were housed in law schools (but sometimes cross-listed in other departments), with Rissman's class at Wisconsin being the sole course without law students or regular law faculty involvement. The seminars were supported by a grant from the Resources Legacy Fund for a planning workshop and a postdoctoral researcher to help coordinate the seminars.

Distributed graduate seminars are coordinated among multiple universities. They begin with a core of interested faculty who organize graduate students at their universities to collect or analyze dispersed data. The distributed graduate seminar offers advantages by allowing for the synthesis of diverse data, the integration of multiple disciplinary perspectives, and the person-power enabled by student research. For students, the distributed seminar provides opportunities to engage with a broader academic community, benefit from new perspectives, and contribute in a meaningful way to a large endeavor. Some challenges of distributed graduate seminars include the costs of coordination and consistency of data collection. In the field of ecology, distributed graduate seminars were popularized by the National Center for Ecological Analysis and Synthesis (NCEAS).[6] Peter Kareiva, one of the participants in the Stanford workshop, previously organized a distributed graduate seminar with

6. *See* O.J. Reichman, *NCEAS: Promoting Creative Collaborations*, 2 PLOS BIOLOGY 0311, 0312 (2004), *available at* http://www.plosbiology.org/article/info%3Adoi%2F10.1371%2Fjournal.pbio.0020072.

NCEAS to evaluate the role of science in Habitat Conservation Plans under the Endangered Species Act.[7] Distributed seminars can be conducted synchronously through live video technology or asynchronously.[8] We opted to conduct all seminars in the Spring 2011, but did not attempt to meet at the same time due to technical challenges with live meetings and academic calendars and differences among course compositions, syllabi, and topical emphasis. Faculty members met in the summer of 2010 to determine what data would be most helpful to collect and how to proceed with the seminar. While we did not unify course readings or paper requirements, we did decide on a unified research approach.

Each seminar examined three to six regions within the state. We selected case study regions based on county or ecological landscape boundaries. We chose regions to capture the range of variability in conservation approaches and included each of these dominant land types: forest, riparian, wetland, coast, rangeland, and cropland. For each case study region, a team of graduate students was responsible for collecting information on landscape characteristics, potential climate impacts, conservation organizations, and conservation easements. For example, in New York, the four regions (and thus four student groups) were the Adirondacks, the Catskills, the Finger Lakes, and Long Island. Each group studied the likely impacts on its region due to climate change and other factors.

Students completed four online Qualtrics[9] surveys for each region:

1) Survey of the characteristics of the region—including climate impacts, vegetation types, socioeconomic

7. *See* PETER KAREIVA ET AL., NAT'L CTR. FOR ECOLOGICAL ANALYSIS & SYNTHESIS, USING SCIENCE IN HABITAT CONSERVATION PLANS (1999), *available at* http://
www.nceas.ucsb.edu/files/
Kareiva%20Using%20science%20in%20habitat%20conservation%20plans.pdf.

8. *See generally* STEFAN HRASTINSKI, ASYNCHRONOUS AND SYNCHRONOUS E-LEARNING, 4 Educause Q. 51 (2008), *available at* http://net.educause.edu/
ir/library/pdf/EQM0848.pdf.

9. Qualtrics is an online survey database supported by the University of Wisconsin-Madison. All four online surveys were developed by Rissman and Bihari at UW-Madison with input from the law professors at all universities.

characteristics, institutional landscape, extent of public lands, land-use planning, and other environmental regulation.

2) Survey of publicly available data for land trusts and government conservation easement holders—including mission, type of organization, year of establishment, number of staff, and number of conservation easements.
3) Survey examining conservation easements—including purposes, landowner rights, conservation easement holder rights, land-use restrictions, process for conflict resolution, and terms related to climate adaptation and conservation easement amendment.
4) Survey summarizing interviews with staff members from each organization—including drafting, monitoring, enforcing, and adapting conservation easements along with steps currently being taken to evaluate and address climate change.

The first survey required inputting general information about the area based on ArcGIS Explorer maps, Climate Wizard, and various public databases. After gathering basic data about the regions, students completed three further online Qualtrics surveys as described above. For the second survey, students had to study a land trust or a government agency conservation easement holder. With guidance from the faculty, students selected an entity in their region that holds conservation easements. They then researched the organization through publicly available documents. Students also asked the conservation easement holders for copies of four conservation easements: the organization's oldest conservation easement, its newest, one from a middle year, and the largest. In survey three , the students analyzed conservation easement terms. The final survey was based on an interview (in person or by phone) with a representative of the organization. In total, students analyzed over 230 conservation easements from 70 organizations.

B. The Attraction

The goals of the distributed graduate seminars were manifold. For natural scientists and conservation biologists, distributed graduate seminars present a means to gather large

amounts of data cheaply and often facilitate writing reports and recommendations on the findings. Indeed, the NCEAS model was developed to collect and analyze highly dispersed information on important emerging topics. For law professors, the seminars offered a way to conduct empirical research while providing students with skills training. Enlisting students in the research process enables greater collection of data. Moreover, coordinating data collection across states and researchers enables easier data analysis. Finally, committing to a seminar in Spring 2011 concentrated the timing of our efforts and imposed clear deadlines.

In addition to our research goals, we were also motivated by the academic community and collegiality presented by such an endeavor. While most (but not all) of the faculty involved knew each other before the seminar and were members of the same epistemic community, this project introduced a level of national collaboration that is uncommon in legal academia in particular. Finally, the distributed graduate seminar provides a unique experience for students. The remainder of this section focuses on the potential benefits we identified for students. These were goals of the course that we identified in discussions before the classes began.

1. Educating students about climate change and land conservation

These courses provided opportunities for students to look at how private land conservation techniques such as conservation easements may need to change in the face of climate change. By focusing on case studies from their states, students gained an understanding of climate change impacts and land conservation efforts in their communities, met and interviewed key players, and learned about important resources. Rebecca Shaw from The Nature Conservancy contributed several narrated power point presentations introducing students to the science of climate change impacts. Students examined what scientists believe will be necessary to protect ecosystems and biodiversity in their regions, considered whether current laws and institutions dealing with private land conservation are up to the task, and explored how those laws and institutions can be improved.

2. Interdisciplinary thinking for complex problem solving

Students gained exposure to different voices and experiences. Students also learned to read materials from different disciplines. Class readings overlapped among seminars, and most students read ecological studies and reports on climate change and social science peer-reviewed articles regarding land conservation attitudes and strategies, along with statutes, regulations, case law, and law review articles more often found in law school seminars. Rissman's non-law seminar featured an "ask a law professor day" in which Cheever joined the class discussion by phone to address students' questions on law review articles and the various conservation easement cases. Additionally, Rissman visited Owley's law seminar to discuss environmental management as well as the logistics of contacting organizations.

3. Students as researchers

Many law students and masters students engage in research in only one or two substantive projects. Often these research projects involve students picking a topic and working on their own in the library to compose a twenty-five to thirty-page paper. This class offered something more. Students were part of a larger project to improve land conservation methods across the country. They considered the challenges faced by land conservationists and formulated research questions and agendas to address those issues. The students viewed and analyzed data from their state to see how those data could help answer questions about land conservation and climate change.

4. Students as investigators

Many graduate students, but especially law students, are used to relying on secondary sources for their papers and briefs. This underplays the role of attorneys (or other professionals) as investigators. Attorneys must spend time gathering facts, analyzing documents, and interviewing key players. Through this class, students received firsthand experience with all three of those techniques while also gaining skills needed to work with experts. Environmental litigation increasingly involves experts.

The ability to talk to and understand experts and the reports they produce is an important one.

5. Students as drafters

By analyzing conservation easements, students had the opportunity to consider legal drafting. In examining the strengths and weaknesses of the agreements in the context of anticipated climatic changes, students considered how to improve the drafting of such agreements. Several law student seminar papers involved proposing specific conservation easement provisions. For many students, it was their first time viewing and drafting documents like these.

6. Learning the tools of the trade

From initial stages, it was clear that this course would involve more technology than the students (or law faculty) were used to. Geographical Information Systems (GIS) was recognized as a key component of studying the landscape. Through free ArcGIS Explorer software, we examined how protected areas work together and where they overlap/intersect with expected climatic impacts like sea-level rise and shifting agricultural zones. We also sought a unified system for online data collection and decided to use Qualtrics Surveys. Students also learned about publicly available tools like the Climate Wizard webpage, online census data, and online access to nonprofit organization tax documents through GuideStar. We also developed an online wiki for sharing information among seminars.

III. STUDYING THE STUDY

Because of our commitment both to the students in our classes and to improving education strategies overall, we examined the educational research literature while developing these seminars. In forming courses, educational experts advise determining the knowledge, skills, and attitudes (KSAs) you want your students to gain. Through group discussions, we identified KSAs that cut across all the courses and faculty. While some faculty may have had additional goals for their courses or

students, the list below represents the goals shared in common by all faculty involved:

1. **Knowledge (we hope students will gain an understanding of . . .)**
   a. Climate change and the likely impacts on the ecosystems they live and work in
   b. The legal requirements of conservation easements
   c. The role of science in legal decision making and policy formation
   d. The impacts of climate change on property institutions
2. **Skills (we hope students will learn how to . . .)**
   a. Investigate
   b. Research / gather data
   c. Interview
   c. Understand spatial maps
   d. Collaborate / work as a team
   e. Integrate scientific and legal research
   f. Formulate, present, and write a research paper incorporating approaches and materials from multiple disciplines
3. **Attitudes / Dispositions (we hope students will. . .)**
   a. Gain a better understanding of the nonprofit organizations and governmental entities working on land conservation
   b. Have higher commitments to working to combat the ills of global climate change and understand the need to work with public and private actors to reach those goals
   c. Gain an expanded sense of community as they coordinate their individual case studies with the larger nationwide framework of research
   d. See a landscape from different viewpoints (legal/ecological/social)
   e. Think through complexities of managing and conserving landscapes

After identifying these KSAs, we put together not only a plan to achieve these ends but also a method to assess whether we had achieved these goals. We decided to use a combination of self-assessment and faculty assessment. For student self-assessment, we created pre- and post-course online surveys with questions based on the above KSAs. Some of the KSAs were also evaluated post course by faculty members reviewing and assessing student work.

Preliminary results of the student surveys indicate that the course was a success from a pedagogical point of view. Students indicated that they had gained most of the skills identified. Students particularly valued the interview and investigation experience. While the surveys indicated an increased understanding of GIS and Web 2.0 technologies, these skills appeared the most challenging for law students in particular as many of them stated that they still do not feel comfortable in those areas. Students on all campuses and from all disciplines stated that their knowledge and understanding of conservation easements and climate change increased, with several students prizing their newfound ability to incorporate interdisciplinary research and understandings.[10]

IV. PRELIMINARY LESSONS LEARNED

With the final courses just finishing and the data analysis still underway, we are at a preliminary stage of examining our lessons learned. Early assessments of the data indicate that we have a unique collection of information that will enable robust assessment of conservation easements in the context of climate change.[11]

From a pedagogical and logistical standpoint, there are already a few things that we can share. All of the faculty involved enjoyed and valued the experience and said that they would conduct either this same course or a similar course again.

10. We intend to publish a fuller analysis of the KSAs and student self-assessments upon completion of all the courses and analysis of the data. Contact authors for further information.

11. William Weeks, Dir., Conservation Law Ctr. at Ind. Univ. Maurer Sch. of Law, Presentation at Natural Resources Law Teachers Institute: Climate Change and Private Land Conservation (May 26, 2011).

The faculty found it to be an exciting and innovative way to teach materials, obtain data, and develop relationships with other faculty members. However, some of the logistical requirements were challenging. Working with existing data would be considerably easier than expecting students to identify organizations, procure copies of conservation easements, conduct interviews, and analyze preliminary results within one semester. Additionally, the faculty worked through challenges related to disciplinary approaches to data collection and synthesis. Nevertheless, students were successful in most cases at completing all four surveys and obtaining the needed information.

While students sometimes struggled with technology or workload, they generally expressed enthusiasm about the course and were eager to hear about results of research from faculty and other students and expressed a hope of more classes along these lines in the future (Table 1). We also learned that undertakings such as these are more time consuming than traditional seminars and require a great deal of coordination. Such an endeavor would have been far less successful if we had not had the support of a full-time postdoctoral researcher, graduate students, and research assistants. All faculty members had supportive administrations that eagerly approved the courses and in some cases approved additional research assistants to make the project successful.

Table 1. Anonymous student survey quotes

Highlights	Lowlights
I feel I improved my ability to search and find differing ways to access knowledge, such as contacting the statutes archives in order to find specific legislation.	Sometimes digesting the literature (especially the law articles) was difficult. Had some problems with ArcGIS Explorer.
While legal, ecological, and social issues related to landscapes are often discussed in isolation, a functional understanding and problem-solving approach requires one to consider the interconnectedness of these issues and	Incorporating legal and ecological information was challenging.

address root causes, not just symptoms of landscape-scale issues.	
The course provided greater opportunity to practice working as a team.	The interview was difficult for me, because it was my first one, but it was a good experience.
Awesome course! Conducting research to answer meaningful and important questions in a course is a tremendous opportunity and a great way to learn about a topic.	Include more time at the end for synthesis. Also I'm not sure we used much of the information in Qualtrics in our final assessment, and yet filling them out took the bulk of the semester.
The most useful (and enjoyable) course I've taken. Thanks!!	The group projects were too loaded to the end of the semester and did not provide sufficient time to engage the results.

V. CONCLUSION

This distributed graduate seminar asked students to tackle an important challenge—how to adapt conservation tools to changing landscapes—by researching the social, legal, political, and ecological aspects of private land conservation. The project challenged students in a unique way because we asked them not just to read and reflect on papers but to engage as researchers and communicators. The overarching goal of the project is to enhance understanding of the vulnerability and adaptability of private land conservation to climate change. This collaborative research effort will provide for multi-scale analyses of private land conservation vulnerability and adaptability, and the drafting, monitoring, and adaptation of conservation easements over time.